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DIRECTORATE OF
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Intelligence Report

*The Effect of the Vietnam War on the Economies
of the Communist Countries*

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July 1968

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
July 1968

INTELLIGENCE REPORT

The Effect of the Vietnam War
on the Economies of the Communist Countries

Summary

By mid-1968, direct outlays by Communist countries in support of the war in Vietnam, plus the cost of repairing damaged facilities in North Vietnam, probably exceeded the equivalent of US \$3 billion. Indirect costs -- consisting primarily of a portion of rising Soviet military spending, but also costs associated with the denial of sophisticated Western technology -- could have doubled these direct costs.

From early 1965, when the United States began bombing the North, until mid-1968, the USSR, Communist China, and the East European Communist countries have furnished more than \$1-1/2 billion in military aid to North Vietnam. Before the bombing, this aid was trifling. From 1965 to mid-1968, the Communist countries sent \$1 billion in economic aid to North Vietnam (for data for 1965-67, see Table 1). Additional direct outlays by the Communist countries -- for shipping costs, the stationing of military and civilian personnel in North Vietnam, and the maintenance of North Vietnamese students -- totaled about \$150 million. In North Vietnam itself, damage to economic facilities from the bombing is estimated to be \$300 million.

Note: This report was produced solely by CIA. It was prepared by the Office of Economic Research and was coordinated with the Office of Strategic Research.

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Two major indirect costs of the Vietnam war are mainly applicable to the USSR, although the trade control restraints have also had an effect on the economies of the Communist countries of Eastern Europe: (1) Heightened East-West tensions over Vietnam have strengthened the hand of the Soviet marshals and made it possible for them to obtain a larger allocation of resources than would otherwise have been the case. In the USSR, military spending in 1965-67 was 3-1/2 billion rubles greater than if it had been maintained at the 1964 level. It is not possible to specify what share of this increased Soviet military spending was due to Vietnam, but if the fraction were appreciable, then indirect military costs alone could be at least as large as the direct outlays made to North Vietnam by the Soviet Union. (2) The Soviet and East European support for the Vietnamese insurgency has slowed down the reduction of trade barriers with the Industrial West and particularly with the United States. This, in turn, has effectively denied access to some of the Western world's machinery embodying advanced technology as well as access to the technology itself -- for example, in the computer, communications, and electronics field. There has probably been a widening in the technological gap between the advanced Communist countries and the Industrial West.

Communist military and economic assistance to North Vietnam apparently has not limited the scale of Communist aid programs in the Free World. Deliveries of aid to the less developed countries of the Free World continued on the same general level as in 1965-66, despite sharply stepped up deliveries to North Vietnam. The massive Soviet resupply of the Arab states after the latter's disastrous war with Israel in June 1967 illustrates the USSR's ability and willingness to sustain substantial unplanned costs in its aid programs if the political gains are judged to be adequate.

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Table 1

Communist Countries:
Aid to North Vietnam a/
1954-67

	Total <u>1954-64</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	Million US \$ Total <u>1965-67</u>
<u>Military b/</u>					
USSR	70	210	360	515	1,080
Communist China	70	60	95	145	300
Eastern Europe	Negl.	Negl.	Negl.	Negl.	Negl.
Total	140	270	455	660	1,380
<u>Economic</u>					
USSR	365	85	150	200	435
Communist China	455	50	75	80	205
Eastern Europe	130	15	50	90	155
Total	950	150	275	370	795

a. Figures have been rounded to the nearest \$5 million and may not add to the totals shown.

b. Data show the value at Soviet foreign trade prices of weapons, other military equipment, and ammunition. They exclude aid for the construction of military installations and defense-related facilities.

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I. Introduction

1. The measurement of the effect of the Vietnam war on the economies of the Communist countries presents several difficulties. In the first place, information is not complete. A great deal of effort has gone into analyzing available information, however, and the data presented in this report may be regarded as reasonable approximations to the real quantities.

2. A second difficulty concerns the adoption of a common unit for valuing widely varying items which originate in wholly different economic circumstances. Current US dollars is the standard used in this report. The chartering of a Greek freighter for the Vietnam run may present no problem in valuation, but the dollar valuation of an obsolescent Soviet jet fighter whose original ruble cost is even in doubt or the cost of shipping goods across a China disrupted by political turmoil present formidable problems.

3. Such problems are also related to the question of "opportunity cost" -- that is, the problem of identifying the best alternative use of resources shipped to North Vietnam. In some cases, a Communist country may be forgoing an important economic gain to support North Vietnam; in other instances, the support may represent only a minor burden or even a net advantage. For example, in dispatching antiaircraft artillery units to North Vietnam, the Chinese Communists would gain some advantage because the alternative use of these troops -- training within China -- polishes their skills much less effectively than does service in a combat area. On the other hand, a Communist country that charters Western ships forgoes the use of this hard currency for purchase of modern machinery in the Free World.

4. The direct economic costs underwritten by the Communist countries include the sending of men, equipment, and materials to Vietnam, for which no return is expected. For North Vietnam itself, the destruction of capital plant by bombing and the lowering of output are direct costs. The

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detailed discussion in this report focuses on these direct costs, which are more concrete and relatively easy to measure. The indirect costs to the Communist countries are harder to pin down. They may be the result of the soured international political atmosphere -- for example, access by the Communist countries to US technology has probably been delayed. Or they may be the result of the preoccupation of Communist leaders with the problems of supporting the war rather than with the problems of modernizing their domestic economies.

II. Effect on the Soviet Economy

5. The direct economic costs of Soviet aid to North Vietnam include the cost of (a) the military and civilian goods sent to North Vietnam; (b) the Soviet military and civilian advisors stationed in North Vietnam; and (c) the Vietnamese students attending colleges and universities in the USSR. The indirect burden on the Soviet economy includes (a) the barriers to trade with the United States that might be removed if not for the Vietnam war; and (b) the increase in influence of the military leadership in the USSR in the competition for scarce resources, ascribable to the uncertainties and political atmosphere surrounding the Vietnam war.

A. Direct Costs

Military Aid

6. The value of military equipment and supplies sent by the USSR to North Vietnam during 1965-67 was approximately \$1.1 billion. Almost one-half of this total represented ammunition (small arms, mortar, and antiaircraft), about one-fourth involved surface-to-air missile (SAM) systems, and the remainder included artillery, aircraft, radar, armor, motor vehicles, and infantry weapons (see Table 2).

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Table 2

USSR: Distribution of Military Aid
to North Vietnam
Total for 1965-67

Type of Equipment	Value (Million US \$)a/	Percentage Distribution
Ammunition	509	47.1
SAM systems	291	26.9
Artillery	143	13.2
Aircraft	86	8.0
Radar	28	2.6
Armor	10	0.9
Motor vehicles	9	0.8
Small arms and infantry weapons	5	0.5
Total	1,081	100.0

a. In Soviet foreign trade prices expressed in
US dollars.

7. Some of the military equipment sent to North Vietnam is obsolete by Soviet standards and is drawn from stockpiles that need no replenishment. The fire control radar sent to North Vietnam, for example, is patterned after US systems used by the USSR during World War II and is no longer used in the USSR. The IL-28 light jet bomber, the MIG-15/17 jet fighter, and the U-MIG-15 jet trainer are in storage in the USSR; they are not in current production and those that are sent to North Vietnam are not replaced. The antiaircraft artillery and much of the armor are similarly obsolete and no longer used by the USSR. It is not known whether ammunition is drawn from stockpiles or current production.

8. Much of the equipment sent to North Vietnam is not obsolete, however. The MIG-21 jet fighter, the MI-6 helicopter, the 122-mm howitzer D-30, and the Side Net radar are examples of Soviet equipment

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sent directly from current production to North Vietnam. All trucks and other motor vehicles, as well as replacement missiles for the SAM systems, apparently are drawn from current production. Nevertheless, the quantities of such equipment sent to North Vietnam have been too small as a fraction of Soviet output to have any significant effect on the rate of production in the USSR. In the case of the MIG-21 jet fighter, for example, the USSR produced an estimated 2,000 units in 1965-67; the number of such fighters sent to North Vietnam over the three-year period is estimated at 67, or about 3 percent of total production.

9. The dollar value of the military aid cited above is not a good measure of the economic burden to the USSR because it is based on foreign trade prices expressed in US dollars. On the basis of internal Soviet prices, the total value of military aid to North Vietnam during 1965-67 amounts to about one-half billion rubles. That part of military aid that represents a claim on current production amounts to approximately 2 percent of Soviet production of military hardware in 1965-67.

10. During 1965-67 the USSR stationed about 2,000 military personnel in North Vietnam, primarily for training and support purposes. The number was probably larger during the first half of 1965, when Soviet technicians exercised operational control of the SAM system, and in mid-1966, when they temporarily resumed control of the system. In general, the Soviet military personnel stationed in North Vietnam provide assistance and training in the use of SAM and radar equipment, aircraft, and communications equipment. The salaries of these personnel, as well as the cost of their maintenance, are paid by the USSR. Because of the small number of military personnel involved, salaries and maintenance probably amount to less than 4 million rubles annually. Furthermore, the benefit from their training in a combat area may well offset any net cost of their assignment to Vietnam.

Economic Aid

11. In addition to the distinctly military aid discussed above, the USSR also provides North Vietnam with economic aid, mostly in the form of grants for which repayment is not required. In

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the three-year period 1965-67, the USSR delivered a total of \$515 million of non-military goods to North Vietnam. Only a small portion of this total -- about \$80 million -- was offset by North Vietnamese exports to the USSR, so that \$435 million of net economic aid was involved. Of this total, in turn, about \$300 million represented grants-in-aid, and the remainder was delivered on a credit basis, subject to repayment in goods or hard currency. There is no evidence that North Vietnam made any payments on this trade deficit during the period under study.

12. The economic aid consists of such products as petroleum, trucks and other motor vehicles, and construction equipment as well as such consumer goods as cotton and silk textiles and bulk food-stuffs. Although designated as "non-military," these goods often play a direct role in sustaining military operations.

13. Whereas much of the military aid is drawn from stockpiles that need no replenishment, the economic aid in general is drawn from current production and represents resources forgone in the civilian economy. In domestic prices, the economic aid probably amounted to at least one-quarter of a billion rubles. Some of the aid, moreover, consisted of products that could have been sold elsewhere for badly needed hard currency. The diesel fuel and wheat flour shipped during 1965-67, for example, could have been sold in the West for almost \$25 million.

14. As in the case of military goods taken out of direct production, the civilian goods sent to Vietnam represent only a tiny fraction of Soviet output of these items. The Soviet planners almost certainly have not had to readjust their output goals for any major civilian item as the result of the Vietnam war.

Other Aid

15. In addition to the goods described and valued above, the USSR underwrites three "service" types of economic aid for North Vietnam -- that is, the costs of (a) Soviet economic technicians stationed in North Vietnam, (b) North Vietnamese

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students attending Soviet colleges and universities, and (c) the shipment of goods from the USSR to North Vietnam.

16. The number of Soviet technicians in North Vietnam has been minuscule, averaging only about 130 per year during 1965-67, and the total cost of their services probably was about one-half million rubles. Part of this cost, moreover, may have been assumed by North Vietnam. The number of North Vietnamese students in the USSR increased from about 2,000 in 1965 to 5,000 in 1967. The total cost to the USSR, including plane fare from Hanoi as well as tuition, room, and board, is estimated at about \$25 million in the three-year period 1965-67. In addition to these costs of training and housing foreign students, there is an additional "cost" involved for the USSR because these students preempt vacancies in colleges and universities that would otherwise be filled by Soviet students.

Shipping Costs

17. As for the shipping costs of military and economic aid, the available price information permits the valuation of shipments by sea in terms of dollars and shipments by land in terms of rubles. Shipping costs by sea for the period 1965-67 are estimated at about \$13 million, and shipping costs by land about 21 million rubles. If the official exchange rate is used for currency conversion, total shipping costs thus amounted to \$36 million, or 33 million rubles.

18. Although the USSR used its own ships for practically all seaborne shipments to North Vietnam, the diversion of these ships made it necessary to charter Western shipping in some of its other trade. The ships involved, moreover, could otherwise have been used on a charter basis to Free World countries. Thus the costs of the North Vietnamese run are best represented by the loss in hard currency of \$13 million.

19. Shipments over land to North Vietnam involved the use of the Trans-Siberian rail route and subsequent transshipment across China. The shipments represented a negligible fraction of

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the overall capacity of the Trans-Siberian route, and thus constituted no particular burden to the Soviet domestic transportation system. Practically all of the overland shipping costs represent the costs of transshipment across China. The cost in resources to China of running the additional trains over its lines is quite small; thus the net cost of transshipment to the Communist countries as a whole also is quite small.

B. Indirect Costs

20. In addition to the direct costs of the Vietnam war, the performance of the Soviet economy is affected indirectly by the war because of (a) continuing restrictions on trade with the United States and (b) the increased preemption of scarce resources by the military establishment. These indirect costs cannot be assessed in terms of rubles and dollars, but they almost certainly are more important to the USSR than the small direct costs described above. For some years the USSR has been striving to buy Western machinery embodying advanced technology as well as the technology itself as part of its effort to modernize the Soviet economy. The United States has supplied very few of these imports -- partly because of trade barriers such as export controls and the USSR's inability to gain most-favored-nation treatment in its trade with the United States. More important, the USSR has had to rely on medium-term and long-term credits to finance its machinery imports, and these credits have not been available in the United States to the extent that they have been in other Western countries.

21. The Soviet position in the Vietnam war has restricted progress on reducing trade barriers with the United States. Therefore, the USSR has in effect been denied an important alternative source of machinery and technology. If US-Soviet trade were conducted on the same basis as West European trade with the USSR, the USSR would be able to increase its total imports of machinery and, in some instances, would have access to machinery better suited to its needs.

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22. The United States has opened a well-publicized "technological gap" with Western Europe; the gap between overall US and Soviet technology is even wider. Computers and their auxiliary equipment are a leading example of US technological superiority. Access to this technology would appreciably benefit the Soviet economy even if only a few hundred million dollars were involved each year. Such imports would be feasible only if existing US restrictions were considerably relaxed. Other fields in which the USSR would benefit substantially from access to Western technology are communications and electronics.

23. The most significant cost of the Vietnamese war to the Soviet economy, however, may have been its role in bolstering military claims in the competition for economic resources. Soviet military expenditures, after ten years of relative stability, increased by about 11 percent between 1965 and 1967, despite urgent needs for more investment in industry and agriculture and growing difficulty in satisfying the demands of Soviet consumers.

24. Although much of the rise in defense spending had its origin in decisions made much earlier to upgrade the strategic attack and strategic defense systems, the outbreak of conflicts in the Middle East and Vietnam has drawn the attention of the Soviet military to the need to devote more resources to general-purpose forces capable of handling limited war situations. Moreover, the uncertainties and political atmosphere surrounding the Vietnam war undoubtedly strengthened the hand of the military leadership and its supporters in the Soviet leadership in the decisions made on resource allocation in 1966 and 1967.

25. The total cost of economic and military aid to North Vietnam in 1965-67 was less than a billion rubles; Soviet military spending in this same period was 3-1/2 billion rubles greater than if spending had been maintained at the 1964 level. It is not possible to specify what share of this increased Soviet military spending was due to Vietnam, but if the fraction were appreciable, then indirect military costs could be at least as large as the direct outlays made to North Vietnam by the Soviet Union. Furthermore, whereas the direct Soviet support of

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the Vietnamese war involves a wide range of resources in fairly adequate supply, the rise in Soviet military spending takes high-quality machinery and materials badly needed for the modernization of the general economy.

III. Effect on the Economies of Eastern Europe

A. Direct Costs

26. The direct economic costs of the Vietnam war to the East European Communist countries* in 1965-67 totaled about \$180 million. The costs include some economic aid, primarily in the form of trade credits and shipping costs, and the costs of training Vietnamese students. The total economic burden was shared fairly evenly among the six East European countries, with no single country contributing more than \$35 million. Eastern Europe has provided only token military aid to North Vietnam.

Economic Aid

27. During 1965-67, North Vietnam imported goods from the East European Communist countries valued at about \$195 million. These imports were offset in part by exports amounting to \$55 million, leaving a trade deficit of about \$140 million. Grants-in-aid amounted to about \$15 million, so that net economic aid was about \$155 million. The trade deficit probably will be converted ultimately to grants-in-aid. There is no evidence of North Vietnamese repayments on credits during 1965-67, and trade credits in the past have been converted into grants-in-aid.

28. Machinery and other heavy equipment, including transportation equipment, seems to dominate East European exports to North Vietnam. Other exports include cotton textiles, bulk foods, and medical supplies. As in the case of Soviet support to North Vietnam, the goods involved in economic aid often play a role in sustaining military operations.

29. Some of the consumer goods could have been marketed in the West for hard currency. The machinery would have found a less ready market in the West. The economic aid to North Vietnam, in any case, was too small to have any significant impact on rates of growth in any of the East European countries.

* Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Rumania.

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Other Aid

30. The number of North Vietnamese studying in East European Communist countries was about 6,000 in 1967, 2,000 in 1966, and probably less than 2,000 in 1965. The opportunity cost of this training is the training which could have been given to the same number of native students. The financial cost, using a figure of \$2,500 per head per year (a rough figure used for like students in the USSR), was about \$25 million in 1965-67. The cost sometimes is handled through channels other than the state budget. In Czechoslovakia and East Germany, for example, contributions on behalf of the North Vietnamese students are solicited from workers in factories and offices.

31. The shipping costs of exports from the East European Communist countries to North Vietnam amounted to about \$5-1/2 million in 1965-67. Although most of the shipping is done by Polish ships, each of the countries presumably pays its share of the shipping costs. These shipping costs, as in the case of the USSR, represent a loss in hard currency earnings to the extent that the ships involved could have been chartered for hard currency. Unless the other East European countries paid Poland in hard currency for delivering their aid to North Vietnam, Poland sustained most of this loss in potential hard currency earnings.

B. Indirect Costs

32. The indirect effects of the Vietnam war on the East European economies bear most heavily on the trade relations between the United States and the East European countries. East European trade with NATO countries other than the United States increased by 14 percent a year in 1965-67, and NATO countries provided the six East European countries with about \$1.9 billion of new medium-term and long-term credits. During the same period, US trade with Eastern Europe has remained stable at about \$250 million.

33. Eastern Europe has an urgent need for Western technology and capital goods, and its expanding trade with Western Europe reflects this need. The East Europeans would like to buy and sell more in the United States but the development of

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Eastern Europe's trade with the United States has been held back by difficulties (a) in finding markets in the United States for East European goods and (b) in obtaining medium-term and long-term credits in the United States on the same terms available in Western Europe. Even if US-East European trade could not be increased significantly, the East Europeans would benefit by involving another powerful trading nation in the competition regarding prices of capital goods and the credit terms attached to purchases from the West. Because of the Vietnam war, the political atmosphere in the United States had not been favorable for the legislation or administrative measures required to relax export controls, grant most-favored-nation treatment, or increase the availability of medium and long-term credit to Eastern Europe. Indeed, new legislation prohibits the Export-Import Bank from supporting sales to countries giving aid to North Vietnam and thus hamstrings new initiatives the United States might make, for example, with regard to its economic relations with Czechoslovakia.

IV. Effect on the Economy of Communist China

34. Communist China's total aid to North Vietnam in the period 1965-67 is estimated at \$505 million, including \$300 million of military aid (military end items only) and \$205 million of economic aid (both war-support items and consumer goods). Aid for 1968 may increase somewhat above the 1967 level. Since the start of the American bombing of North Vietnam, China's aid has increased sharply, as shown by the following tabulation:

	Million US \$			
	<u>Total</u> <u>1954-64</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>
Military aid	70	60	95	145
Economic aid	455	50	75	80
<i>Total</i>	525	110	170	225

35. In 1965-67, China has given North Vietnam more aid in monetary terms than any country except the USSR. In tonnage terms, China's contribution

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has far exceeded that of any other country. This support has been of great aid to North Vietnam, particularly in support of its subversive efforts in the South. Yet it has cost the Chinese economy very little.

36. China's greatest contributions have been in items that the Chinese can provide with the least strain on the economy -- rail and sea transport, small arms and ammunition, construction materials, light machinery and equipment, food-stuffs, textiles, and other consumer goods. In addition, China has maintained 30,000 to 50,000 engineering, antiaircraft, and radar troops for use in the reconstruction and guarding of transportation lines north of Hanoi.

37. China's aid to North Vietnam could become a perceptible economic burden if Mao's great political rectification campaign -- the Cultural Revolution -- continues. The growth of the Chinese economy has already been ended by the physical violence and administrative dislocations of the Cultural Revolution, and any extension of these problems would intensify the already serious economic problems. Nevertheless, because of the small cost of Chinese aid to North Vietnam, a cut in aid on economic grounds is unlikely in the near future.

A. Military Equipment

38. The increasing supply of small arms and ammunition to North Vietnam would be the only military aid having any real effect on China's economy, and that effect would be small (see Table 3). These items represent only a small proportion of the tonnage but more than half the value of material sent by China during 1965-67. China, however, can easily spare these materials from available stocks or replace them by increasing present production. For most of these items, the rate of supply to North Vietnam is probably no more than 25 percent of China's domestic manufacturing capacity. Only under sharply increased disturbances from the Cultural Revolution would any needed increase in production pose a serious problem.

39. Most of the other military items supplied by China have been in token amounts. In 1965, China supplied some 25 T-34 medium tanks and in 1967 some

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Communist China: Volume and Value of Military Aid Deliveries to North Vietnam a/
1965-67

	1965		1966		1967	
	Units	Million US \$	Units	Million US \$	Units	Million US \$
Aircraft	8	1	0	0	50	7
MIG-15/17 jet fighter	8	1			50	7
Naval craft	2	2	2	2	6	4
Shanghai-class fast patrol boat	2	2	2	2	6	4
P-6 class motor torpedo boat						
Armor	25	1	0	0	0	0
T-34 medium tank	25	1				
Artillery	320	6	140	4	645	8
57-mm AAA	100	4	100	4	100	4
37-mm AAA	200	2				
14.5-mm AAA						
Field artillery (76-mm)	20	Negl.	40	Negl.	120	1
Radar	33	3	112	9	67	7
Trucks and other vehicles b/	600	3	400	2	700	4

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Table 3
 Communist China: Volume and Value of Military Aid Deliveries to North Vietnam a/
 1965-67
 (Continued)

	1965		1966		1967	
	Units	Million US \$	Units	Million US \$	Units	Million US \$
Small arms and other infantry weapons	10		35		22	
Ammunition (metric tons)	8,000	33	10,000	41	23,000	94
Total value	60		95		145	

- a. The data refer exclusively to combat materiel; they exclude aid designed for war-support purposes. Values reflect foreign trade prices charged by the USSR for equipment delivered to the less developed countries of the Free World. Because of rounding, components may not add to the total values shown.
- b. Estimates for vehicles assigned to the armed forces. Vehicles used for military-support purposes are not included.

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50 MIG-15 and MIG-17 jet fighters and a number of artillery pieces. These items were either obsolescent or excess equipment of small value to China in monetary or strategic terms.

40. China has supplied Hanoi with most of its modern naval combatant vessels -- all patrol or PT boats -- but the number in this period (10) has not affected China's supply or production. In 1968, China could replace or increase the units in North Vietnam from its own operational units with no appreciable loss to its own order of battle.

B. Military Manpower

41. The cost to China of maintaining the 30,000 to 50,000 troops it has in North Vietnam is merely a matter of shipping costs for the necessary food and other supplies for these troops. China would have to maintain these troops if they were still stationed in China; thus the real cost to China is a shipping cost of approximately \$200,000 for the estimated 12,000 metric tons of supplies shipped each year. Even this amount may exceed the true net cost, because these troops might otherwise be stationed at distant posts in China that also entailed long-distance shipment of supplies.

42. An important offset to this cost for China is the combat training acquired by these troops during tours in North Vietnam. China has rotated the troops periodically to spread the benefit of this training. The value of this experience has been particularly high for the antiaircraft and radar troops. The engineering troops probably would be of value to China for construction projects at home, but their loss is negligible in an economy where the labor supply is abundant.

C. Industrial Equipment and Materials

43. China has shipped substantial quantities of construction materials such as steel, cement, and railroad construction equipment as well as trucks, spare parts, drugs and medicines, and other machinery and equipment. Coking coal has also been supplied for the Thai Nguyen steel works, which was constructed by China for North Vietnam. Coal shipments ended after the bombing of Thai Nguyen in May 1967, and the total shipped in 1967 is estimated at 65,000 tons, a drop of 100,000 tons from each of the preceding two years.

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44. All of these materials have accounted for more than half the total tonnage of China's economic aid for 1965-67 (1.8 million tons) but probably less than one-half of the total value of the aid for this period (\$205 million). North Vietnam's needs presumably will change with the changed pattern of American bombing and the reduced need for railroad reconstruction. The composition of aid is expected to shift away from the bulk items in the industrial category toward the restoration of plant and equipment.

D. Consumer Goods

45. Among consumer goods, China's most important export has been foodstuffs. In 1967, more than 200,000 tons of grain and other bulk foodstuffs were identified in shipments to North Vietnam from China by sea. Undoubtedly other food shipments were among the estimated 300,000 tons of unidentified cargo shipped by China via rail and sea. Thus the total food shipments from China in 1967 probably were more than one-third of the economic aid in tonnage and about one-half of the value. Despite the small volume of identified shipments of food in 1965 and 1966, the ratio was presumably in the same proportion for these years, although smaller in absolute numbers.

46. China had a good harvest in 1967, and the shipments to North Vietnam represented only a small fraction of 1 percent of total domestic food supply. Shipments are expected to increase again in 1968 even though China's domestic output of food probably will drop.

47. China also sends North Vietnam sizable quantities of textiles, both cloth and finished clothing. The annual value in 1965-67 probably ranged from \$5 million to \$15 million. More than 20 million meters of cloth were shipped in 1967. Shipments in 1968 would normally be expected to increase; they would still remain less than 1 percent of domestic production. Because of the Cultural Revolution, which has led to a decline in textile production and to slashes in cloth rations, any additional supplies for North Vietnam would be at the expense of an already short-changed populace. Nonetheless, the amounts involved are small and the inconveniencing of additional consumers within China is not likely to be a decisive factor in Chinese policy.

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48. The food and textile shipments to North Vietnam, however, may have been made, not at the expense of domestic consumption, but at the expense of exports to the Free World. This alternative is discussed briefly under "Foreign Exchange Implications," below. Other consumer goods supplied by China to North Vietnam are minor in volume and value.

E. Shipping Costs

49. The cost to China of transporting goods to North Vietnam is small in terms of both money and alternative opportunities. Costs of transhipment of the materials sent by rail from the USSR and the East European Communist countries are borne by those countries. The Chinese rail system has more than enough unused capacity to handle the additional burden. The Cultural Revolution, however, has placed China's rail system under a strain and has caused delays, bottlenecks, and shortages of raw materials, such as coal. Special efforts have been necessary to expedite goods bound for North Vietnam, both shipments and transshipments. These efforts are not to be regarded as an economic cost of the Vietnam war but rather as one attempt to straighten up the economic dislocations caused by the Cultural Revolution.

50. Total shipping costs for both economic and military aid are minor for rail transport -- approximately \$12 million for 1965-67 -- particularly since the cost is internal and does not involve hard currency. Cost for seaborne shipments for the entire period are estimated at \$15 million, but again most of the costs do not involve hard currency. The small hard currency costs involved are discussed below.

51. These costs are estimated from tonnages shown in Table 4. Miscellaneous and other cargoes have been estimated according to the principal commodities known to be supplied by China. Rates have been assigned according to the latest rates available. Shipping points have been estimated according to the type of commodity. Method of shipment, where unknown, has been arbitrarily assigned to fit the total tonnage estimated for the commodity. The resulting shipping costs are

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reasonably good estimates for costs which in any case are not subject to normal economic valuation in the marketplace.

Table 4

North Vietnam: Imports from China
1965-67

	<u>1965</u>	<u>1966</u>	<u>1967</u>
Volume (Thousand Metric Tons)			
Total (rounded)	520	665	710
By sea	<u>247.8</u>	<u>305.9</u>	<u>501</u>
Grain	17.1	37.2	213
Petroleum	13.4		56 a/
Miscellaneous	67.3	118.7	232
Other b/	150.0	150.0	
By rail	<u>270</u>	<u>360</u>	<u>210</u>
Military	13	15	25
Coal	165	165	65
Other	92	180	120
Value (Million US \$)			
Total	130	190	235
Military aid c/	60	95	145
Economic aid	50	75	80
Other economic d/	20	20	10

a. Presumably transshipment of Soviet POL.

b. Estimated volume carried by Chinese and North Vietnamese ships, most of which probably came from China.

c. Value of military hardware and ammunition, excluding the value of military troops or engineers, and their support.

d. Value of North Vietnamese imports paid for with exports.

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F. Foreign Exchange Implications

52. The most important foreign exchange implication for China is the presumed loss of potential hard currency earnings -- estimated at \$35 million to \$45 million -- as a result of increased shipments of food and cloth to North Vietnam. The amounts of cloth being sent to North Vietnam, however, are far less than the amounts formerly shipped to the USSR and Indonesia before those markets were lost. China has had trouble finding alternative markets, and these shipments represent less of a hard currency loss than it seems at first glance. In the same way, the largest item of food sent to North Vietnam is rice -- at least 150,000 tons in 1967 worth approximately \$25 million -- and the increase represented here is much less than the decrease in sales to Japan. China probably could improve its hard currency position by sales of these materials to the Free World, but not by as much as the total possible value. In effect, this judgment means that the food and cloth shipments to North Vietnam are partly at the expense of the domestic consumer -- where they are a drop in the bucket -- and partly at the expense of foreign exchange earnings -- where they could be used to expand imports of machinery and materials from the Free World.

53. Another potential hard currency cost to China is the cost of chartering Free World vessels to ship materials to North Vietnam. Almost all of the Free World shipping going to North Vietnam in recent years has been chartered by China, but usually from firms in Hong Kong that are believed to be controlled by China. In essence, China has been chartering ships from itself; thus the real hard currency costs would be in opportunity costs. Here, again, China's lack of an adequate merchant fleet to handle its own foreign trade means that the alternative use of these ships would have been in China's own trade with the Free World. The real hard currency cost, then, is the increased shipping costs to China in its Free World trade because these ships were not available. These costs have probably been about \$10 million for the period 1965-67 based on an estimated 100,000 tons a year carried by these ships and using an average freight rate for the types of cargoes carried.

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V. COCOM Effect and Effect on General Economic Relations with the West

54. The war in Vietnam is one, but only one, of the factors that are reviving the issue of a "China differential" in economic defense arrangements. China's support of North Vietnam probably has not made an appreciable difference in China's ability to import modern equipment and technology from non-Communist industrialized nations. China's general attitude toward trade with the West and toward admission of Western technicians has been more important in determining changes in its economic relations with the West than has the Vietnam war.

55. In any case, China is already receiving from Japan and Western Europe substantial quantities of machinery and equipment directly or indirectly related to its military effort. Through various means China already is getting technology related to advanced weapons from the West, and China's support or lack of support of North Vietnam does not seem to affect this situation. Whereas the USSR could profit from fuller access to US technology, Communist China is not able to absorb all the opportunities now available for technical support from the Free World.

VI. Effect on the Economy of North Korea

56. North Korean shipments of material aid to North Vietnam apparently have been only in token quantities. Accordingly, the cost is small but, in the absence of detailed information, is not quantifiable with any precision.

A. Military Aid

57. North Korea has shipped an unknown number of light weapons -- mostly 7.62-mm semiautomatic and automatic AK rifles, but also some light machineguns. North Korean ground forces in North Vietnam number only several hundred men, and they are employed mainly in the capacity of advisors. About 35 North Korean pilots have served in North Vietnam since 1965 on a rotational basis, flying combat missions in MIG jet fighters. The 175 North Korean pilots, however, have probably gained more in combat experience than they have contributed to the war effort.

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B. Economic Aid

58. Economic aid agreements were signed with North Vietnam in July 1965, January and September 1966, and August 1967. No details on amounts of aid and commodities were publicized. Materials shipped under these agreements probably include small amounts of fish, steel products, farm equipment, railroad equipment, diesel engines, cement, fertilizer (ammonium sulfate), textiles, industrial products, and medical supplies. Barges and lighters have also been shipped in recent years, including 20 to 25 in 1967 and 3 to 5 in the first quarter of 1968.

VII. Effect on Communist Aid Programs in the Free World

A. Military Aid Programs

USSR

59. There is no indication that Soviet military and economic assistance to North Vietnam has limited the scale of Soviet military aid deliveries to less developed countries of the Free World or to Cuba. Notwithstanding the increased amount of aid channelled to North Vietnam since the start of the US bombing in early 1965, the USSR has consistently been able to carry out its programmed military aid obligations to the less developed countries and even expand the list of countries participating in the program. Barring a drastic increase in the dimensions of the Soviet aid program in North Vietnam, the USSR will be able to continue fulfilling its other military aid commitments for the foreseeable future.

60. The less developed countries receiving Soviet arms aid have been provided with practically all of the major items of Soviet military equipment supplied to the North Vietnamese, including MIG-21 jet fighters, SA-2 surface-to-air missiles, anti-aircraft artillery, and infantry weapons. In addition, the USSR has supplied the less developed countries with TU-16 jet medium bombers, SU-7 fighter-bombers, Komar-class and Osa-class missile patrol boats, and coastal defense cruise missiles, items not yet identified in the North Vietnamese inventory.

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61. The 25 percent decline in Soviet military aid deliveries in 1965, compared with the annual average of 1960-64 (see Table 5), is largely explained by the curtailment of the program in Indonesia after the abortive Communist coup of September 1965. In 1965, Indonesia received only \$50 million worth of military equipment -- about a 70 percent decline from the \$170 million average of annual deliveries in 1960-64.

Table 5

Communist Countries: Military Aid Deliveries
to Less Developed Countries
1960-67

Donor	1960-64 (Average)	Million US \$		
		1965	1966	1967
USSR	448	336	450	373
East Europe	5	9	43	27
Communist China	2	3	46	
<i>Total</i>	455	348	539	400

62. In 1967 the value of Soviet military deliveries to less developed countries rose to \$450 million, or the average annual level of deliveries in 1960-64. This increase was principally the result of large-scale deliveries to India of \$165 million worth of equipment.

63. The massive Soviet resupply of the Arab states after the June 1967 war with Israel underscores the USSR's ability and willingness to sustain substantial unplanned costs in its arms aid program. Since mid-1967 the USSR has supplied the UAR, Syria, Algeria, and Iraq with an estimated \$350 million worth of military equipment -- most of which has been earmarked for restoring Arab military inventories to pre-war levels.

64. In addition to its substantial deliveries of military aid to the Free World in 1965-67, the USSR provided increased amounts of military aid to Cuba. Soviet military aid deliveries to Cuba grew

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from September 1966 to December 1967 to the highest level since the period prior to the missile crisis of late 1962. During this recent period the USSR shipped some 58,000 tons of military cargo -- largely replacements for worn-out or obsolete equipment. Among the items delivered were at least 27 MIG-21 fighters, six Komar-class guided missile patrol boats, seven SO-1-class subchasers, and a number of 200-mm multiple rocket launchers.

Eastern Europe

65. Eastern European (mostly Czechoslovak) military deliveries to the less developed countries have not been perceptibly affected by demands of the Vietnam war. The Eastern European countries delivered an estimated \$79 million in military equipment to those countries during 1965-67, about three times the total amount delivered in the previous five year period.

Communist China

66. Lack of information precludes any definitive judgment on the effect of the Vietnam war on the small Chinese Communist military aid program in the less developed countries. The absence of any identified Chinese military aid deliveries in 1967, following substantial deliveries to Pakistan in 1966, may have been the result of the disruptive effects of the Cultural Revolution on China's foreign relations. Given the small size and scope of China's military aid program in the less developed countries, it is difficult to see how China's support of the Vietnam war would rule this program out on economic grounds. In any case, Chinese Communist military deliveries to several less developed countries have resumed in 1968.

B. Economic Aid Programs

General

67. Communist assistance to North Vietnam has had no discernible effect on the scope or character of Communist economic aid programs in the less developed countries of the Free World or on the willingness of Communist countries to implement aid previously committed to these nations. Communist countries have continued to extend additional aid to less developed countries where

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opportunities exist, in spite of their commitments to the war effort in Vietnam. Both programs in the aggregate are a tiny fraction of Communist resources and, moreover, they represent demand that is "spread out" over a broad area of the donor economies.

Extensions

68. In 1965 and 1966, Communist commitments of economic assistance to the less developed countries rose to record levels at the same time that support of the war effort of North Vietnam was expanding (see Table 6). Although new economic aid commitments to less developed countries dropped in 1967 to a 12-year low, the decline is not attributable to a change in Communist aid policy or to the diversion of supplies to North Vietnam. Instead, it reflects the reduced opportunities in 1967 for extending additional aid to these countries, following three years of record-high extensions. Recent Soviet aid overtures to less developed countries demonstrate the high priority that the USSR continues to assign to economic aid where it may contribute to the containment or reduction of Western influence or provide long-run economic benefits to the USSR. In 1968, Communist extensions of economic aid to less developed countries are expected to rise again and, at a minimum, will exceed annual average extensions in 1960-64.

Table 6

Communist Countries: Extensions of Economic Aid to Less Developed Countries of the Free World
1960-67

	Million US \$			
	Total	USSR	Eastern Europe	Communist China
1960-64 Total	3,882	2,184	1,046	652
1965	1,404	650	635	119
1966	1,607	1,267	220	120
1967	214	90	75	49

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Deliveries

69. In addition to supporting the long-run development efforts of less developed countries, the Communist countries also have continued to deliver equipment and to provide technical services for current aid programs. It is deliveries, rather than extensions, that would indicate any immediate impact of the Vietnam war. In 1966 and 1967 the East European countries and Communist China increased deliveries of economic aid to the less developed countries under previous commitments. Although Soviet deliveries declined in 1966 and 1967 (see Table 7), this decline was not caused by the diversion of resources to North Vietnam as the two programs do not compete for the same resources. The bulk of Soviet economic assistance to North Vietnam consists of commodities and small, light industrial and agricultural enterprises, and North Vietnam's share of Soviet exports of complete plants has changed very little from the prehostilities period (see Table 8). On the other hand, commodity assistance has accounted for less than 5 percent of total Soviet aid to the developing countries while approximately 70 percent of the total value of Soviet aid to the less developed countries has been allocated for industrial use, mostly for heavy industry.

70. The decline in Soviet deliveries of economic aid to less developed countries since 1965 is attributable chiefly to domestic problems in the recipient countries which have limited their ability to provide adequate local resources to complement Soviet aid. For example, the inability of India's depressed economy to absorb scheduled Soviet aid shipments for the construction of heavy industrial plants resulted in a 50 percent drop in deliveries in 1967 compared with 1966. Recent declines in Soviet aid deliveries also are related to the construction cycle for large projects, where major equipment deliveries are concentrated in a short period.

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Table 7

Communist Countries: Deliveries of Economic Aid
 to Less Developed Countries of the
 Free World and to North Vietnam
 1960-67

	Million US \$			
	1960-64	1965	1966	1967
<u>North Vietnam</u>	<u>435</u>	<u>150</u>	<u>275</u>	<u>370</u>
USSR	216	85	150	200
Eastern Europe	62	15	50	90
Communist China	157	50	75	80
<u>Less Developed Countries</u>	<u>1,723</u>	<u>521</u>	<u>506</u>	<u>493</u>
USSR	1,262	350	328	288
Eastern Europe	343	90	93	110
Communist China	118	81	85	95

Table 8

USSR: Exports of Complete Enterprises
 to Major Areas
 1961-66

	Percent			
Total	Less Developed Countries	North Vietnam	Other Communist Countries	All Other Countries
1961	100.0	39.0	3.3	57.6
1962	100.0	44.3	5.3	49.6
1963	100.0	39.8	4.4	44.7
1964	100.0	49.2	3.1	47.6
1965	100.0	46.3	5.3	47.2
1966	100.0	38.1	5.2	54.0

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Economic Technicians

71. The number of Communist technicians in the less developed countries declined in 1967 as several major projects, such as the Aswan Dam, neared completion and as political differences erupted with host countries -- for example, the Chinese Communist dispute with Burma. There is no evidence that technicians were withdrawn from less developed countries because their services were required either at home or in North Vietnam.

VIII. Effect on the Economy of North Vietnam

72. The effect of the war on the economy of North Vietnam itself is the compounded result of engaging in the war in the South and undergoing massive bombing attacks at home. The war in the South has drained off many of North Vietnam's physically fit young males and has required the movement through North Vietnam of weapons, ammunition, food, medical supplies, and the like that come primarily from other Communist countries. The bombing in the North has caused the diversion of large numbers of workers to the repair of bomb damage, to civil defense tasks, and to transport work and has also increased the requirement for imports of construction materials, transport equipment, consumer goods, and the weapons and ammunition for air defense. The economy of North Vietnam, therefore, has been mobilized to act both as a source of manpower for the battlefields in the South and as a funnel through which arms and supplies can reach these battlefields. The remainder of this section addresses the damage inflicted by the bombing attacks on the North.

73. Damage inflicted by the bombing of North Vietnam has caused substantial loss of output and has reduced potential economic growth. At the same time, increased aid from other Communist countries has permitted the North Vietnamese to prosecute the war effort without serious deterioration of their standard of living despite major disruptions to economic activities. Cumulative measurable damage through April 1968 is estimated at more than \$440 million; the rate of damage reached a peak in 1967, as shown in the tabulation below. In addition to the measurable losses, there are other losses to the economy and the military establishment which cannot be measured but would be valued in the tens of millions of dollars.

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<u>Facilities and Equipment</u>	<u>Million US \$</u>				
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>Jan-Apr 1968</u>	<u>Total</u>
Economic	36.2	93.3	158.1	17.6	305.2
Military	32.7	20.3	78.1	5.5	136.6
<i>Total</i>	<i>68.9</i>	<i>113.6</i>	<i>236.2</i>	<i>23.1</i>	<i>441.8</i>

A. Economic Damage

Industrial Facilities

74. A large part of North Vietnam's small industrial sector is out of operation because of direct bomb damage or a shortage of electric power. Cumulative measurable damage to industrial facilities is estimated at \$60 million, as shown in the following tabulation:

	<u>1965-Apr 1968</u> <u>(Million US \$)</u>
Electric powerplants	33.1
Manufacturing plants	18.2
Petroleum supplies and facilities	7.8
Shipyards	0.9
<i>Total</i>	<i>60.0</i>

75. The bombing of large plants has forced the North Vietnamese to adopt a policy of decentralization and to emphasize development of local industry. A number of small manufacturing plants have been built, and some larger plants in areas subjected to bombing have been dispersed. Industry has not contributed substantially to North Vietnam's military capabilities, however, and the damage apparently has had little direct influence on the war effort.

76. Most of the damage to industry was inflicted during the first half of 1967. A decrease in the level of strikes during the latter part of 1967 and the first part of 1968 allowed the North Vietnamese to restore some capacity to operation. For example, at the end of April 1968, about 45 percent of the

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national electric generating capacity was operational, compared with about 20 percent from June through October 1967. Repairs and an increase in the electric power output have also permitted operations to resume at several manufacturing plants, including parts of the Viet Tri Chemical Complex and much of the coal-processing facilities at Cam Pha and Hon Gai. An extensive system of dispersed POL sites has offset the destruction of fixed petroleum storage facilities in 1966. Damage to shipyards has not significantly hindered the production of boats or the fabrication of barges.

Transport Facilities and Equipment

77. Heavy damage to the transport system has increased the cost of moving goods and has forced the use of less efficient alternative facilities and methods. The flow of imports and domestic supplies, however, has not been seriously restricted, because of (1) extensive and rapid repair work, (2) the construction of new rail lines, roads, and bypasses, and (3) the infusion of substantial amounts of foreign aid. Both transport capacity and equipment inventories have been maintained or increased. Cumulative damage to transport facilities and equipment is as follows:

1965-Apr 1968
(Million US \$)

Transport equipment	81.8
Bridges	38.2
Railroad yards and shops	6.6
Ports	1.8
Other (including road and rail cuts)	2.4
<i>Total</i>	130.8

Indirect Losses

78. In addition to the direct physical damage, the economy has suffered considerable indirect loss. Although agriculture and fishing have not been targeted for attacks, their output has been curtailed because of the air and naval bombardment. Agricultural production has suffered from (a) disruption of work routines resulting indirectly from the bombing, (b) disruptions to the supply and

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distribution of fertilizer, and (c) a weakening of economic administration in rural areas. The fish catch has decreased because of the threat of air and naval attacks against watercraft and the seeding of MK-36 influence bombs* in waterways. The cumulative loss in rice production, including an unknown share of losses as a result of adverse weather, and in the fish catch is estimated as follows:

1965-Apr 1968 (Million US \$)	
Rice production	60.5
Fish catch	12.8
<i>Total</i>	73.3

79. Both of the rice crops in 1967 are believed to have been below average, but the shortfalls probably did not cause more than localized food shortages. Some of the decrease in rice output has been offset by increased production of subsidiary crops. Increased imports of bulk food in 1967 and 1968 have been greater than the estimated decrease in rice production.

80. Exports of bulk products that make up about 20 percent of the value of North Vietnam's exports also have been disrupted by bomb damage and by increased costs of domestic transport. Cement output was cut off in mid-1967 by bombing of the Haiphong Cement Plant. Coal output was curtailed drastically by damage to electric power and processing facilities in mid-1967. Output of pig iron at Thai Nguyen was halted in April 1967, and exports by sea of apatite were cut off in mid-1965 when interdiction of the Lao Cai rail line raised transport costs. The cumulative measurable loss in North Vietnam's seaborne exports attributable to the bombing is shown in the following tabulation:

* The MK-36 is a modified bomb that is mechanically armed 25 minutes after delivery and is detonated by any magnetic disturbance generated by ferrous material or objects.

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1965-Apr 1968
(Million US \$)

Apatite	17.6
Coal	17.4
Cement	4.1
Pig iron	2.0
<i>Total</i>	41.1

81. Although substantial in terms of volume, measurable export losses each year have been less than 20 percent of the value of annual exports prior to the bombing, and have been minor compared with contributions of economic aid from other Communist countries.

B. Military Damage

Fixed Facilities

82. The cumulative value of damage to fixed military facilities is estimated at about \$75 million, as shown in the following tabulation:

1965-Apr 1968
(Million US \$)

Barracks	31.2
Ammunition, supply, and motor vehicle depots	16.3
Air defense system (air-fields and antiaircraft artillery, a/ SAM, a/ and radar sites)	15.0
Other (including naval bases, dispersed storage areas, truck parks, and communications sites)	12.2
<i>Total</i>	74.7

a. *Including equipment.*

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83. Heavy damage to the military establishment throughout the air campaign has forced the North Vietnamese to disperse military facilities for men and supplies but has had little effect on North Vietnam's economy. Attacks against JCS-targeted barracks, the most important barracks complexes existing before the air campaign, destroyed about 20 percent of the national barracks capacity and forced the abandonment of an additional 7 percent. The North Vietnamese have not attempted to repair this damage, and the men have been dispersed to temporary shelters or civilian housing. Dispersal of ammunition, supply, and vehicle depots has increased logistic requirements, causing temporary local shortages but not seriously restricting the general movement of military or economic goods. Destruction of supplies has been offset by increased imports.

84. The cost of damage to air-defense-related facilities such as airfields and antiaircraft artillery, SAM, and radar sites has had little effect on the North Vietnamese economy. Most of the building material is obtained locally, and equipment is imported from Communist countries, probably as grants. The air defense system has been gradually expanded since 1965 despite the heavy damage inflicted. Communist China has contributed to this expansion by furnishing antiaircraft units and engineering construction battalions. The antiaircraft and SAM systems presently operate from a large number of temporary as well as fixed sites. Mobility is stressed and equipment is being made less vulnerable to attack.

Military Equipment

85. The air campaign has destroyed a substantial amount of military equipment which was provided by the USSR and Communist China. Most of the value of damage, estimated at nearly \$62 million, resulted from destruction of MIG's and helicopters as shown in the tabulation below. (Estimates of antiaircraft and SAM equipment destroyed and damaged have been included with the value of fixed facilities.)

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1965-Apr 1968
(Million US \$)

Aircraft	47.6
Radar	9.5
Naval craft	4.8
<i>Total</i>	61.9

86. The North Vietnamese have lost about 119 jet fighters since the beginning of the air campaign, of which 84 were lost in 1967. Replacements of MIG-21's from the USSR and MIG-17's from China have been more than sufficient to replace these losses. North Vietnam's small navy has been maintained through replacements from China, and modern equipment for the early-warning and ground-control-intercept systems has been provided in abundant quantities from both China and the USSR.

C. General Impact on the Economy

87. The war and the bombing have eroded the North Vietnamese economy, making the country increasingly dependent on foreign aid. However, because the country is at a comparatively primitive stage of development and because the bombing has been carried out under important restrictions, damage to the economy has been small. The basic needs of the people are largely satisfied locally. Imports from Communist countries have enabled North Vietnam to make up for losses in industrial production and to take care of new needs created by the war.

88. The overall level of economic activity probably did not change much in 1965 and 1966, but went down in 1967. Agricultural production dropped in 1966 and again in 1967, partly because of poor weather. Most of the important industrial plants and powerplants were not made targets of the bombing until 1967. Loss of industrial output, therefore, has been incurred largely since mid-1967. Some consumer goods have been in short supply, and the price of some of them has risen beyond the reach of the average consumer. The official rice ration has been maintained, but imported foodstuffs are being substituted to an increasing degree in the urban ration.

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89. Significant losses to North Vietnam's economy that are not entirely offset by outside aid are (a) the almost complete hiatus in development since 1965, (b) the actual losses in manpower, and (c) the loss of man-hours of workers diverted to defense, to repair of bomb damage, and to the movement of goods. The disruption of normal work routines, the separation of families, and the physical anguish from the repeated bombings have taken an unmeasurable toll in productivity. Bombings have required the diversion of up to 200,000 workers to full-time repair of lines of communication and to transport tasks. Another 300,000 to 400,000 have been taken frequently from their normal work to perform parttime tasks related to the bombing. Several hundred thousand young and old have been evacuated from urban areas.

90. The bombing has resulted in casualties over the past three years totaling about 76,000, of whom one-third may have been killed. Approximately 100,000 troops have been tied up in air and coastal defense. For the past three years, increased military manpower requirements have taken most of the estimated 120,000 physically fit males reaching draft age annually.

D. Postwar Rebuilding Costs

91. The direct costs of restoring North Vietnam's damaged economy will be borne primarily by Communist aid donors. About \$130 million in foreign economic assistance will be required to reactivate industrial capacity and to repair damage in the non-industrial sectors. In addition, aid in the form of consumer goods and raw materials will be required for several years until output of industry and agriculture can more nearly meet domestic needs. Foreign technical assistance will be needed in almost every sector of the economy. The present general level of economic assistance probably will be maintained during the immediate reconstruction years. The following tabulation shows a possible distribution of direct reconstruction costs among economic sectors:

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	<u>Million US \$</u>
Manufacturing	20
Fuels and power	30
Transportation	50
Military	30
<i>Total</i>	<i>130</i>

92. The North Vietnamese almost certainly will make a concerted effort to restore the economy rapidly to the state that existed before the bombing. This could be accomplished in two to three years. High priority will be given to restoring the transportation network, particularly bridges, and parts of the electric power industry. Repair of severely damaged equipment in the electric power industry may be deferred in favor of completing work on the Thac Ba Hydroelectric Powerplant which was being built with Soviet aid. Under an accelerated construction schedule and with an investment of \$15 million -- about one-half the cost of restoring all damaged power facilities -- this powerplant could be put into service within 18 months, thus making available more generating capacity than has been damaged by the bombing.

93. Essential industries to be rebuilt will include chemicals, construction materials, and textiles. Among these a large effort will be needed to restore the Haiphong Cement Plant and the Nam Dinh Textile Plant. Concurrently with restoration, relocation of some dispersed industries will take place and production lines will be reoriented from wartime requirements. Earnings of foreign exchange could rapidly regain prewar levels. Even now, coal exports are approaching normal levels, and exports of handicrafts have been generally sustained during the past three years. Seaborne shipments of apatite could be resumed as soon as through rail service from Lao Cai to Haiphong is resumed. Exports of pig iron cannot be resumed until the Thai Nguyen Iron and Steel Complex is repaired, probably with Chinese Communist assistance.

94. The amount of commodity credits required in the postwar period will depend largely on conditions in agriculture. Substantial imports of food and of fertilizer probably will continue in

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the immediate postwar years. Although agriculture has not been a target of the bombing program, it has been disrupted by a combination of unfavorable weather and indirect effects of the bombing.

95. North Vietnam probably will not initiate construction of new basic industries in the immediate postwar period since much of the country's industrial capacity had barely been assimilated into the economy when the bombing began. Several large plants -- for example, the Phu Tho Phosphate Fertilizer Plant, the Thai Nguyen Iron and Steel Complex, and the Bac Giang Chemical Fertilizer Plant -- either had just begun partial operation or were not yet in operation. North Vietnam had already negotiated for a number of small specialized plants which probably will be constructed in the immediate postwar years to increase regional self-sufficiency. Nonetheless, the postwar effort will consist primarily of restoration of existing facilities.

E. Sources of Postwar Aid

96. On the basis of past economic assistance, it is estimated that the direct reconstruction costs will be distributed as follows:

	<u>Million US \$</u>
USSR	45
Communist China	65
Eastern Europe	20
<i>Total</i>	<i>130</i>

The USSR probably will provide a greater portion of the commodity aid. Communist China will play a key role in reconstruction because many of the major industrial installations in North Vietnam were Chinese aid projects. China also provided electric power equipment for several of the large powerplants including those at Thai Nguyen, Bac Giang, and Viet Tri. In addition, the heavy assistance by Communist China in construction, particularly of roads and rail lines, probably will be continued in the immediate postwar years. Among the European Communist countries, the principal postwar donor for reconstruction probably will be Poland, with Rumania and Hungary following in that order.

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IX. General Appraisal of These Costs

97. The short-term costs of supporting the Vietnam war -- as described in the preceding sections -- are small, especially in comparison with the vast political and military issues involved. Since the start of the US bombing, military aid by the Communist countries has amounted to more than \$1.5 billion and economic aid to about \$1 billion. A portion of these sums does not represent a net loss, either because the best alternative use of the resources is unimportant or because the aid brings with it some offsetting advantages, such as the training of antiaircraft units under combat conditions.

98. The type of support furnished by each of the Communist countries usually has represented areas of economic strength. For example, China can readily furnish manpower and basic construction materials and the USSR can make use of its large stockpiles of obsolescing weapons. A further factor in easing the burden on the Communist economies is that shipments are "spread out" over a variety of fairly standard items. Thus the aid apparently created no severe bottlenecks for any major commodity or transportation line, nor has it required any major changes in overall economic plans.

99. The indirect costs are pertinent especially to the USSR, although they also have had an effect on the economies of Eastern Europe. The strained political atmosphere has postponed the lowering of barriers in US-USSR trade and has thus delayed Soviet access to the world's foremost source of advanced technology. Furthermore, if the rise of 3-1/2 billion rubles in the Soviet military budget since 1964 can be partly attributed to the Vietnam war, this would constitute another reduction in high-quality resources available to modernize Soviet industry over the long run.

X. Costs in the First Half of 1968

100. Information on Communist military aid to North Vietnam in the first half of 1968 suggests that it is continuing at about the same rate as in 1967. Information on economic aid suggests a rate for the first half of 1968 about 20 percent higher

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than in 1967. Thus, in Table 1, if the first half of 1968 were added to the period 1965-67, the total figure for military aid would be increased from \$1.38 billion to \$1.7 billion and the total figure for economic aid would be raised from \$795 million to \$1.0 billion.

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